Amendment to the Claims

1. (Currently amended) Apparatus for generating and displaying a plurality of strain rate spectrums in response to Doppler data generated by an ultrasound system, said apparatus comprising a strain rate processor being responsive to said Doppler data to generate said plurality of strain rate spectrums, wherein said strain rate processor comprises:

a first element being responsive to said Doppler data to generate a plurality of raw strain rate spectrums; and

a second element being responsive to said plurality of raw strain rate spectrums to generate said plurality of strain rate spectrums.

2. (Currently amended) The apparatus of claim 1 wherein said ~~strain rate processor comprises:~~ first element comprises a circular convolution element being responsive to said Doppler data to generate [[a]] said plurality of raw strain rate spectrums, said Doppler data comprising two sets of Doppler spectrums; and wherein said second element comprises a scaling element being responsive to said plurality of raw strain rate spectrums to generate said plurality of strain rate spectrums, said plurality of strain rate spectrums comprising scaled magnitude values.

3. (Original) The apparatus of claim 2 wherein said two sets of Doppler spectrums comprise a first set of Doppler spectrums corresponding to a first sampled depth along an ultrasound beam generated by said ultrasound system and a second set of Doppler spectrums corresponding to a second sampled depth along said ultrasound beam.

4. (Currently amended) The apparatus of claim 1 wherein said ~~strain rate processor comprises:~~ first element comprises a spectral estimating element being responsive to said Doppler data to generate [[a]] said plurality of raw strain rate spectrums, said Doppler data comprising two sets of complex Doppler packets; and wherein said second element comprises a scaling element being responsive to said plurality of raw strain rate spectrums to generate said plurality of strain rate spectrums, said plurality of strain rate spectrums comprising scaled magnitude values.

5. (Original) The apparatus of claim 4 wherein said two sets of complex Doppler packets comprise a first set of complex Doppler packets corresponding to a first sampled depth along an ultrasound beam generated by said ultrasound system and a second set of complex Doppler packets corresponding to a second sampled depth along said ultrasound beam.

6. (Original) The apparatus of claim 5 wherein said spectral estimating element is responsive to the complex conjugate of a first complex Doppler packet from said first set of complex Doppler packets and a second complex Doppler packet from said second set of complex Doppler packets to generate a single raw strain rate spectrum of said plurality of raw strain rate spectrums.

7. (Currently amended) The apparatus of claim 1 wherein said strain rate processor comprises: a complex autocorrelation element being responsive to said Doppler data to generate a plurality of complex autocorrelation packets, said Doppler data comprising a plurality of complex Doppler packets; <u>wherein said first element comprises</u> a spectral estimating element being responsive to said plurality of complex autocorrelation packets to generate [[a]] <u>said</u> plurality of raw strain rate spectrums; and <u>wherein said second element comprises</u> a scaling element being responsive to said plurality of raw strain rate spectrums to generate said plurality of strain rate spectrums, said plurality of strain rate spectrums comprising scaled magnitude values.

8. (Original) The apparatus of claim 7 wherein each raw strain rate spectrum of said plurality of raw strain rate spectrums is generated from a unique subset of said plurality of complex Doppler packets, and each complex Doppler packet within said unique subset corresponds to a unique sampled depth along an ultrasound beam generated in a scan plane by said ultrasound system.

9. (Original) The apparatus of claim 1 wherein said generating and displaying of said plurality of strain rate spectrums is accomplished in real-time as an integrated function of said ultrasound system.

10. (Original) The apparatus of claim 1 wherein said generating and displaying of said plurality of strain rate spectrums is accomplished as a post-processing function, independent of real-time operation of said ultrasound system.

11. (Original) The apparatus of claim 1 further comprising a display processor responsive to said plurality of strain rate spectrums to generate a strain rate spectrogram that is displayed to an operator of said ultrasound system on a monitor as a spectral time-line image.

12. (Original) The apparatus of claim 1 wherein a display format of a spectral time-line image derived from said plurality of strain rate spectrums comprises strain rate versus time.

13. (Original) The apparatus of claim 1 wherein a display format of a spectral time-line image derived from said plurality of strain rate spectrums comprises Doppler frequency difference versus time.

14. (Currently amended) A method for generating and displaying a plurality of strain rate spectrums in response to Doppler data generated by an ultrasound system corresponding to a tissue segment within a subject, said method comprising performing strain rate processing in response to said Doppler data to generate said plurality of strain rate spectrums, wherein said strain rate processing comprises:

generating a plurality of raw strain rate spectrums; and

generating said plurality of strain rate spectrums in response to said raw strain rate spectrums.

15. (Currently amended) The method of claim 14 wherein said ~~strain rate processing comprises:~~ generating a plurality of raw strain rate spectrums comprises performing circular convolution processing in response to said Doppler data to generate [[a]] said plurality of raw strain rate spectrums, wherein said Doppler data comprises two sets of Doppler spectrums; and wherein said generating said plurality of strain rate spectrums in response to said raw strain rate spectrums comprises performing intensity value scaling in response to said plurality of raw strain rate spectrums to generate said plurality of strain rate spectrums, wherein said plurality of strain rate spectrums comprises scaled magnitude values.

16. (Original) The method of claim 15 wherein said two sets of Doppler spectrums comprise a first set of Doppler spectrums corresponding to a first sampled depth along an ultrasound beam generated by said ultrasound system and a second set of Doppler spectrums corresponding to a second sampled depth along said ultrasound beam.

17. (Currently amended) The method of claim 14 wherein said ~~strain rate processing comprises:~~ generating a plurality of raw strain rate spectrums comprises performing spectral estimation processing in response to said Doppler data to generate [[a]] said plurality of raw strain rate spectrums, wherein said Doppler data comprises two sets of complex Doppler packets; and wherein said generating said plurality of strain rate

spectrums in response to said raw strain rate spectrums comprises performing magnitude value scaling in response to said plurality of raw strain rate spectrums to generate said plurality of strain rate spectrums, wherein said plurality of strain rate spectrums comprises scaled magnitude values.

18. (Original) The method of claim 15 wherein said two sets of complex Doppler packets comprise a first set of complex Doppler packets corresponding to a first sampled depth along an ultrasound beam generated by said ultrasound system and a second set of complex Doppler packets corresponding to a second sampled depth along said ultrasound beam.

19. (Original) The method of claim 18 wherein performing said spectral estimation processing in response to the complex conjugate of a first complex Doppler packet from said first set of complex Doppler packets and a second complex Doppler packet from said second set of complex Doppler packets results in a single raw strain rate spectrum of said plurality of raw strain rate spectrums.

20. (Currently amended) The method of claim 14 wherein said strain rate processing comprises: performing complex autocorrelation processing in response to said Doppler data to generate a plurality of complex autocorrelation packets, said Doppler data comprising a plurality of complex Doppler packets; wherein said generating a plurality of raw strain rate spectrums comprises performing spectral estimation processing in response to said plurality of complex autocorrelation packets to generate

[[a]] said plurality of raw strain rate spectrums; and wherein said generating said plurality of strain rate spectrums in response to said raw strain rate spectrums comprises performing magnitude value scaling in response to said plurality of raw strain rate spectrums to generate said plurality of strain rate spectrums, said plurality of strain rate spectrums comprising scaled magnitude values.

21. (Original) The method of claim 20 wherein each raw strain rate spectrum of said plurality of raw strain rate spectrums is generated from a unique subset of said plurality of complex Doppler packets, and each complex Doppler packet within said unique subset corresponds to a unique sampled depth along an ultrasound beam generated in a scan plane by said ultrasound system.

22. (Original) The method of claim 14 wherein said generating and displaying of said plurality of strain rate spectrums is accomplished in real-time as an integrated function of said ultrasound system.

23. (Original) The method of claim 14 wherein said generating and displaying of said plurality of strain rate spectrums is accomplished as a post-processing function, independent of real-time operation of said ultrasound system.

24. (Original) The method of claim 14 further comprising performing display processing in response to said plurality of strain rate spectrums to generate a strain rate

spectrogram that is displayed to an operator of said ultrasound system as a spectral time-line image.

25. (Original) The method of claim 14 wherein a display format of a spectral time-line image derived from said plurality of strain rate spectrums comprises strain rate versus time.

26. (Original) The method of claim 14 wherein a display format of a spectral time-line image derived from said plurality of strain rate spectrums comprises Doppler frequency difference versus time.

27. (Original) A diagnostic ultrasound scanner for generating and displaying a plurality of strain rate spectrums corresponding to a tissue segment of a subject, said diagnostic ultrasound scanner comprising:

a front-end transmitting ultrasound energy into said subject along a scan line, said front-end being responsive to said transmitted ultrasound energy backscattered from said subject and generating received beamformed data along said scan line;

a demodulation module responsive to said received beamformed data and generating complex Doppler packets;

a Doppler processing module responsive to said complex Doppler packets and generating Doppler spectral data;

a strain rate processing module responsive to Doppler data and generating a plurality of strain rate spectrums;

a spectrum buffer module responsive to said plurality of strain rate spectrums and generating a strain rate spectrogram; and

a display architecture responsive to said strain rate spectrogram and generating a spectral strain rate image.

28. (Original) The diagnostic ultrasound scanner of claim 27 wherein said Doppler data comprises said Doppler spectral data.

29. (Original) The diagnostic ultrasound scanner of claim 27 wherein said Doppler data comprises said complex Doppler packets.

30. (Original) The diagnostic ultrasound scanner of claim 27 wherein a display format of a spectral time-line image derived from said plurality of strain rate spectrums comprises strain rate versus time.

31. (Original) The diagnostic ultrasound scanner of claim 27 wherein a display format of a spectral time-line image derived from said plurality of strain rate spectrums comprises Doppler frequency difference versus time.